

REMARKS / ARGUMENTS

1. Summary of the Office Action

Claims 1-7 stand rejected under § 103(a) as allegedly being unpatentable over Lee et al. (US 5,808,735) in view of Mishima et al. (US 4,823,194).

2. Response to § 103 Rejections

In response to the above-identified Office Action, the Applicant has amended the application and respectfully requests reconsideration thereof. The amended claim is supported by the specification as originally filed, page 8 lines 31-36, therefore, no new matter is added.

The above amendments patentably distinguish the present invention over Lee in view of Mishima. Lee describes a method for detecting and characterizing defects on a test surface of a semiconductor wafer. In the method described by Lee, “the test and reference images are aligned and their relative intensities are compared pixel-by-pixel. The x-y locations of any test and reference pixel pair P_T , P_R having intensity values I_{MAX} that differ by an amount exceeding the intensity-error threshold I_{TH} assigned to the x-y location are identified as potential defect pixels” (Lee, Col. 6, lines 21-26).

However, Lee does not teach or suggest the following features of the present claims: (1) “plotting a gray level of a pixel from the first image against a gray level of a corresponding pixel from the second image for all aligned pixel locations” and (2) “plotting at least a threshold window on the plot, wherein an area outside the threshold window indicates a possible defect” (Claim 1).

Indeed, Lee only discloses plotting intensity histogram representing the intensity difference of the test and reference pixels. In particular, the “intensity differences of the remaining pixels are then used to create an intensity histogram. The peak value of the intensity histogram represents the most common intensity difference between test and reference pixel pairs P_T , P_R . In step 220 ADC system 20 compensates for normal intensity differences by offsetting the intensity values of each reference pixel $P_R(I_{max})$ by the peak value of the intensity

histogram.” (Lee, Col.6, lines 26-34). It will be noted that Lee is only concerned with “intensity difference” in the histogram and for the purpose of normalizing the image intensity of the test and reference images. This is significantly different from the present claim wherein a gray level of a pixel from the first image is plot against a gray level of a corresponding pixel from the second image for all the aligned pixel locations. Consequently, this alone is sufficient to render the present claim patentable over Lee.

In addition, Lee fails to teach or suggest, “plotting at least a threshold window on the plot, wherein an area outside the threshold window indicates a possible defect”, as presently claimed. Indeed, nowhere in Lee was there mentioned of plotting a threshold window on the plot that relates the gray level of pixels from the first image against the second image for all aligned pixel locations. Therefore, Lee fails to teach or suggest each and every element of the present claim, and, as such, the present claim is patentable over Lee.

Even the additional teachings of Mishima fail to rectify these deficiencies. Mishima discloses a method for processing gray scale images, in particular to extract “a target image such as characters or a figure from an original gray scale picture to be processed clearly at a high speed, even if the original picture has a complicated background and/or even under the condition that the illumination in the original picture is uneven or changed” (Mishima, Col.2, lines 22-27).

However, Mishima does not teach or suggest the following features of the present claims: (1) “plotting a gray level of a pixel from the first image against a gray level of a corresponding pixel from the second image for all aligned pixel locations” and (2) “plotting at least a threshold window on the plot, wherein an area outside the threshold window indicates a possible defect” (Claims 1 and 7). Indeed, the invention of Mishima relates to image enhancing and is absolutely unconcerned with “plotting a gray level of a pixel from the first image against a gray level of a corresponding pixel from the second image for all aligned pixel locations” and a threshold window so that possible defects can be identified. At best, Mishima only generates graphs representing a three-dimensional profile of the gray level distribution of the image (Mishima, Col. 9, lines 45-60; Figures 10a-c). These graphs of Mishima are absolutely different from the present claim. Indisputably, Mishima fails to teach or suggest each and every element of the present claim, and consequently, the present claim is patentable over Mishima.

In addition, to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references, when combined, must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In the present case, there has been no showing of the required motivation for the suggested combination, nor has there been any showing of a reasonable expectation of success. In an attempt to cure the deficiencies of Lee, the Office Action cites Mishima and suggests that it would be obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Lee and Mishima. This conclusion finds no support in the references, however. Indeed, the Office Action cites no motivation for such a combination, other than a general desire to provide an improved system. See Office Action p. 4, ll. 1-7. This rote invocation of a general desire to make existing technologies better is an insufficient basis for reaching a conclusion of obviousness. Instead, what is needed is an actual showing of motivation to make the desired combination. Consequently, the conclusion of obviousness is fatally flawed and the rejections should be removed.

Moreover, each of the references themselves provides what appears to be a complete solution. Neither of the references suggests that additional processing steps are needed to improve image quality beyond the techniques disclosed therein. For example, according to Lee, his method for characterizing defects on semiconductor wafers enable different surface layers to be analyzed to determine an optimal threshold value (Lee, Abstract). For his part, Mishima indicates that his technique provides for extracting a target image such as characters or a figure from an original gray scale picture to be processed clearly at high speed, even if the original picture has a complicated background and/or even under the condition that the illumination in the original picture is uneven or unchanged" (Mishima, Col. 2, liens 21-27). Nothing in these disclosures suggests that any combination of these processes is desirable, consequently there exists no motivation for the recited combination.

Rather than making a proper prima facie case of obviousness then, it appears the teachings of the present application have been used as a blueprint to gather together and assemble various components of the prior art in the manner contemplated by the present applicants. This is a classic example of the use of hindsight reconstruction, and cannot properly be used as grounds for rejecting the present claims. Indeed, the U.S. Court of Appeals for the Federal Circuit has rejected such applications of hindsight by specifically indicating that when an obviousness rejection is made based upon a combination of references, an examiner "must show reasons that the skilled artisan, confronted with the same problems as the inventor *and with no knowledge of the claimed invention*, would select the elements from the cited prior art references for combination in the manner claimed." *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998) (emphasis added). Merely indicating, as in the present Office Action, that the claimed invention would be obvious to one of ordinary skill in the art based on the combination of the references inadequate.

As demonstrated above, the present Office Action deconstructs the subject matter of the claims into its constituent components, states where each such component may be found in one of the cited references, and then concludes that it would have been obvious to combine the references to arrive at the claimed invention. This bare bones analysis is not sufficient to support the present rejections. The burden is on the Examiner to show *why* one would be so motivated as to come up with the combination. *Rouffet* at 1357-1358 ("If such a rote invocation could suffice to supply a motivation to combine, the more sophisticated scientific fields would rarely, if ever, experience a patentable technical advance. Instead, in complex scientific fields the [Patent Office] could routinely identify the prior art elements in an application, invoke the lofty level of skill, and rest its case for rejection. To counter this potential weakness in the obviousness construct, the suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness.") Accordingly, the present rejections should be removed.

Claims 6 and 7 include the feature of "a plot of the gray levels of pixels from the first image against the gray levels of corresponding pixels from the second image". In view of the remarks above, it is also submitted that Lee in view of Mishima do not disclose all the elements

of these claims. Accordingly, claims 6 and 7 are also allowable for at least the reasons stated above.

3. **Conclusion**

Having tendered the above remarks and amended the claims as indicated herein, the Applicant respectfully submits that all rejections have been addressed and that the claims are now in a condition for allowance, which is earnestly solicited.

If there are any additional charges, please charge Deposit Account No. 02-2666. If a telephone interview would in any way expedite the prosecution of the present application, the Examiner is invited to contact Jaina Chua at (408) 947-8200 ext. 213.

Respectfully submitted,

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